

REMARKS

The Office action of August 28, 2003 has been received and its contents carefully noted.

Claims 1-40 are pending in the application. Claims 1, 13, 15, 20-22, 28, 30, and 36-37 have been amended. Claims 38-40 have been added without the addition of any new matter.

Claims 13-22 stand rejected under 35 U.S.C. § 102(b) as being unpatentable over Iu (U.S. Patent No. 5,471,252). Claims 1-5, 11-12, 23-30, and 32-35 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ozcelik et al. ("Ozcelik") (U.S. Patent No. 5,574,663) in view of Background of the Invention. Claims 6-10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Iu (U.S. Patent No. 5,471,252). Applicant respectfully traverses these rejections, and request allowance thereof in the continuation prosecution application for the following reasons.

The Claims are Patentable Over the Cited References

Claims 13-22 are not anticipated by Iu

Claims 13-22 stand rejected under § 102(b) in view of Iu. Applicant strongly contends that Iu fails to disclose the features recited in these claims as amended such as deriving a motion vector field for the image and smoothing the motion vector field by

replacing a given motion vector by a new motion vector by averaging motion vectors comprising neighbouring motion vectors.

In contrast to the recited feature, Iu does not smooth a motion vector field by averaging motion vectors as recited, but instead averages values corresponding to differences between pairs of motion vectors. Further, Iu does not replace a given motion vector by an averaged motion vector as recited, but instead a motion vector is derived by minimizing an energy function value (not derived from an average of motion vectors) using, for example, a simulated annealing algorithm.

Therefore, it is clear that Iu does not disclose the recited feature of a deriving a motion vector field for the image and smoothing the motion vector field by replacing a given motion vector by a new motion vector by averaging motion vectors comprising neighbouring motion vectors making the claimed invention patentably distinct and non-obvious from the cited reference.

Claims 1-5, 11-12, 23-30, and 32-35 are not made obvious by Ozcelik and Background of the Invention

Claims 1-5, 11-12, 23-30, and 32-35 stand rejected under § 103(a) in view of Ozcelik and Background of the Invention. Applicant strongly contends that Ozcelik and Background of the Invention, either alone or in combination, fail to disclose the

features recited in these claims as amended such as deriving a dense motion vector field for an image and performing vector quantization on the motion vector field wherein vector quantization is performed on vectors having components from at least two motion vectors in the motion vector field.

Throughout the disclosure, Ozcelik solely describes a method and apparatus for regenerating a dense motion vector field and makes completely no mention, as admitted in the Action, of performing vector quantization on the motion vector field wherein vector quantization is performed on vectors having components from at least two motion vectors in the motion vector field as recited.

Further, the Background of the Invention makes a brief mention of vector quantization of motion vectors but this brief mention solely refers to standard vector quantization based on an individual 2-dimensional vector and therefore significantly differs from the recited feature of quantization on the motion vector field wherein vector quantization is performed on vectors having components from at least two motion vectors in the motion vector field.

Furthermore, regarding claim 23, Applicant strongly contends that it is not obvious to apply general image signal techniques to motion vectors wherein this is hindsight reasoning based on knowledge of the present invention which is prohibited in view of

well-known patent case law. Even if it is known to encode image signals at different resolutions, Applicant strongly contends it is not therefore obvious to encode motion vector fields at different resolutions. Conceptually, image signals and motion vector fields are significantly different, and known processing of image signals is not inevitably directly applicable to motion vectors as for example, on a simple level, pixel values are scalar quantities and motion vectors are vectors and therefore quite distinct from each other.

Therefore, it is clear that Ozcelik and the Background of the Invention, either alone or in combination, do not disclose the recited feature of deriving a dense motion vector field for an image and performing vector quantization on the motion vector field wherein vector quantization is performed on vectors having components from at least two motion vectors in the motion vector field making the claimed invention patentably distinct and non-obvious from the cited reference.

Claims 6-10 are not anticipated by Iu

Claims 6-10 stand rejected under § 103(a) in view of Iu. Applicant strongly contends that Iu and Ozcelik, either alone or in combination, fail to disclose the features recited in these claims as amended such as a deriving a dense motion vector field for an

image and performing vector quantization on the motion vector field wherein vector quantization is performed on vectors having components from at least two motion vectors in the motion vector field.

As contend above, Ozcelik fails to mention the recited feature as Ozcelik solely describes a method and apparatus for regenerating a dense motion vector field and makes completely no mention, as admitted in the Action, of performing vector quantization on the motion vector field wherein vector quantization is performed on vectors having components from at least two motion vectors in the motion vector field as recited.

Further, Iu makes no mention of the recited feature making the recited feature of performing vector quantization on the motion vector field wherein vector quantization is performed on vectors having components from at least two motion vectors in the motion vector field patentably distinct and non-obvious from the cited references.

Conclusion

In view of the amendments and remarks submitted above, it is respectfully submitted that all of the remaining claims are allowable and a Notice of Allowance is earnestly solicited.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayments to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

The Examiner is invited to contact the undersigned at (703) 205-8000 to discuss the application.

Respectfully submitted,

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by


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Attachments